C1850-2
3/2/88

A CAHNERS PUBLICATION FEBRUARY 15, 1988 SIX DOLLARS

Electronic Business

The rise and rise of Sun workstations in Japan PAGE 26

The toast of Europe: Bulging PC orderbooks PAGE 122

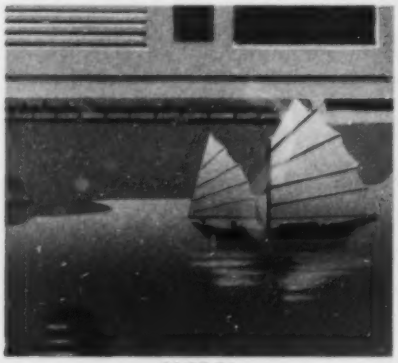
P1372521 (8801) 006/ 92
ACQUISITIONS EDITR
COGRESSIONAL INFO SRVC
SRI ACQUISITIONS
4520 EAST-WEST HWY
BETHESDA MD 20814

Fluke & Winn: Why John Fluke Mfg. may go dutch with Philips on more than marketing PAGE 50

Electronic Business

VOL. 14, NO. 4 FEBRUARY 15, 1988

THE BUSINESS MAGAZINE FOR MANAGEMENT IN ELECTRONICS, COMPUTER AND SYSTEMS COMPANIES



PAGE 26

PAGE 50

PAGE 122

BUSINESS TRENDS

26 Watching the Sun rise over Japan's workstation markets
Sun Microsystems is emerging as the top workstation vendor in Japan. But Apollo and DEC aren't snoozing.

30 Outside test shops: Your chips or your money, please
Stuck in a tiny and mature market, independent test labs have two choices: get your chips to test, or the funds to survive.

36 Latter-day laminates: Fewer producers, but better quality
Circuit-board makers may soon have an improved product to work with as their suppliers of laminates merge.

42 Pinching pennies: Who'll hurt most from copper's run up?
Sharp increases in the price of copper mean buyers of boards, connectors, leadframes, wire and cable will all pay more.

44 Stop press! Fuzz-buster firm busts production speed limit!
Car radar detector maker Whistler cut production cycle time from 22 days to three, and it didn't do it with automation.

AN EDITORIAL INDEX OF ALL COMPANIES DISCUSSED IN THIS ISSUE CAN BE FOUND ON PAGE 146

MANAGEMENT

50 Fluke/Philips: The combo may team up on manufacturing, too
Dutch giant Philips' stake in John Fluke Mfg. makes it a strong No. 3 in the instruments market. So why aren't HP and Tektronix impressed?

62 Alex d'Arbeloff: On buying market share . . . and CAE
The Teradyne chief has been on a spending spree lately. He's looking beyond test to the CAE world.

KEEPING AMERICA COMPETITIVE

98 IBM Charlotte: Winner of the 1988 Factory Automation Award
ProPrinter plant builds a card in 24 hours, 3,000 cards a day. Cost of assembly automation was $6 million.

PRODUCTIVITY

110 Robots in Mexico? Automation where many are jobless? Sure.
U.S. electronics firms are automating their plants south of the border. The push for high quality is just one reason why.

COMPUTER BUSINESS

121 Computer Focus: DEC may soon surpass IBM in midrange market share.

122 The rise of European PCs
Look for strong growth this year in PCs.

128 Minisupers: Prices are cut as competition heats up
A shakeout is on the way in the minisuper market.

134 BellSouth: Risky business for the biggest Baby Bell
RBOCs are going after the videotex services market. BellSouth's leading.

136 European printer makers losing the battle
Japan's printer makers plan to build Euro-factories to beat tariffs.

DEPARTMENTS

4 Inside Business

9 Update

17 Business Barometer: Can computer production keep growing this year?

138 Emerging Companies: Data Race: The Texan that aims to be the lone star in telecom.

140 Executive Viewpoint: Strategies for repositioning your product.

143 Calendar

146 Editorial Index

148 Viewpoint: The service coefficient.

Cover photo: Louis Bencze

ELECTRONIC BUSINESS® (ISSN 0163-6197) is published semi-monthly, except monthly in December, by The Cahners Publishing Company, A Division of Reed Publishing USA, 275 Washington Street, Newton, MA 02158-1630. Terrence M. McDermott, President; Frank Sibley, Group Vice President; Jerry D. Neth, Vice President/Publishing Operations; J.J. Walsh, Financial Vice President/Magazine Division; Thomas J. Dellamaria, Vice President/Production and Manufacturing. Circulation records are maintained at Cahners Publishing Company, 44 Cook Street, Denver, CO 80206-5191. Telephone: (303)388-4511. Second-class postage paid at Denver, CO 80206-5191 and additional mailing offices. POSTMASTER: Send address corrections to ELECTRONIC BUSINESS® at the Denver address. ELECTRONIC BUSINESS® copyright 1988 by Reed Publishing USA; Saul Goldweitz, Chairman; Ronald G. Segel, President/C.E.O.; Robert L. Krakoff, Executive Vice President; William M. Platt, Senior Vice President. Annual subscription rates for non-qualified people: USA/Canada/Mexico, $50 per year; other countries, $85 per year (including air freight), $170 per year for air mail. Except for special issues where price changes are indicated, single copies of regular issues are available for $6.00, $8.00 and $10.00 (USA, Canada/Mexico and foreign). Please address all subscription mail to Eric Schmierer, 44 Cook Street, Denver, CO 80206-5191. Cahners Publishing Company, A Division of Reed Publishing USA • Specialized Business and Consumer Magazines for Building & Construction • Foodservice & Lodging • Electronics & Computers • Interior Design • Book Publishing & Libraries • Printing • Medical/Health Care • Manufacturing • Industrial/Research Technology • Child Care & Development.

VBPA ABP

Can computer production keep growing this year?

Apple and Sun, are going strong. But chip supplier Motorola sees signs of slowing growth

Few people have their wet finger up in the computer business winds like Doug Powell, the marketing director at Motorola Semiconductor Products Division, who is reponsible for watching the computer market. Powell, a former computer designer himself, must anticipate which chips computer companies may buy in the future, and how many.

The connection is strong because computers are the major market for U.S. chip makers. At every business cycle, semiconductors have led computers by six to nine months. During the last cycle, shipments of semiconductors to the U.S. market peaked in the third quarter of 1984, whereas the Federal Reserve Board's industrial production index for "computers and office equipment" (SIC 357) peaked three quarters later. In 1985, U.S. computer makers were still shipping their products, but were not buying many chips because orders from their customers had already fallen off.

So far, production of computers and sales of semiconductors are doing very well. The FRB's industrial production index ended 1987 on a very strong note. After passing the 1984 peak in the second quarter, the index closed 1987 up 9% for the last quarter and 5% for the year. Cahners' senior economist Elizabeth Baatz expects the production index to continue growing smartly this year. She forecasts that 1988 will be up 14%, with the index peaking in the last quarter, remaining even in the first quarter of 1989, then sliding down gently but still closing down the year up 2% over 1988. Similarly, market research firm Henderson Ventures forecasts 13% growth in 1988, but its view of 1989 is for 8%, more bullish than Baatz's. Semiconductor sales, on the other hand, may have peaked already in the third quarter of last year, although they seem to have held close to that peak level in the fourth.

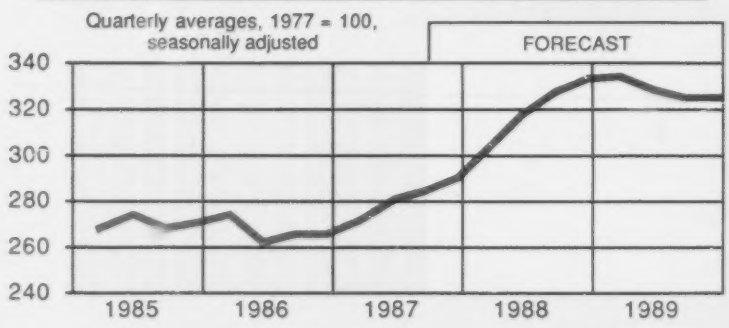
Most of the growth in computers has come from its two price ends — personal computers and supercomputers. Sales by key companies, weather vanes to business winds in the low end, such as personal computer pioneer Apple Computer Inc. and hard disk technology leader Maxtor Corp., were up almost 50% in 1987. Sun Microsystems Inc., *wunderkind* of workstations, nearly doubled its sales in the calendar year. At the high end, sales by supercomputer leader Cray Research Inc. were up 15%. Most of the production and value added by these companies takes place in this country, thus contributing to the FRB's industrial production tally.

Apple's and Sun's most successful computers are based on Motorola's 68000-series microprocessors. But Powell already discerns some signs that growth in that business may slow down sooner than the forecasts suggest. He claims that manufacturers of small computer systems have ordered enough hard disks and other peripherals for their 1988 production, and may pare down their inventories this year.

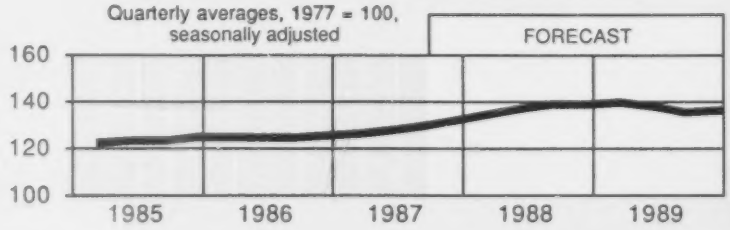
ALBERTO SOCOLOVSKY

Computers and office equipment (SIC 357)

Computer and office equipment production index



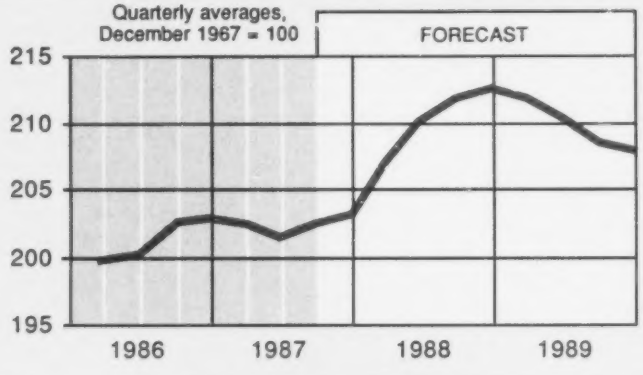
Total U.S. industrial production index



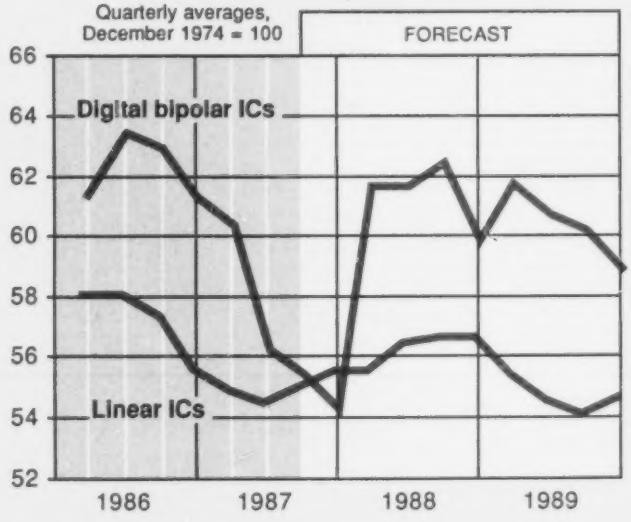
Historical data: Federal Reserve Board; Forecast: Cahners Economics

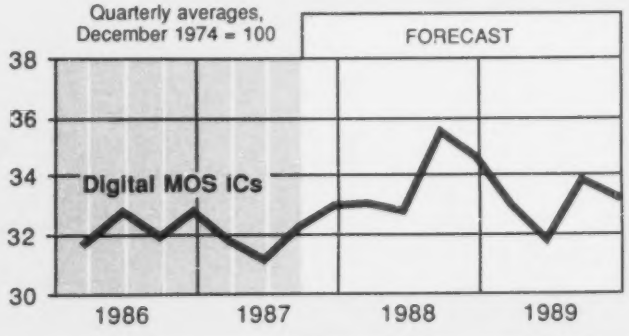
Producer price indexes

Electronic components and accessories (SIC 1178)



Active components





Historical data: Bureau of Labor Statistics; Forecast: Cahners Economics

Electronic components
Prices of most types of electronic components continued to weaken in the fourth quarter of 1987, according to the Bureau of Labor Statistics. In the fourth quarter, the producer price index for all components rose 0.2% above year-ago levels. The annual increase for components in 1987 was 0.5%, the lowest price rise since 1976. A lengthening of delivery times and rising import price pressures is expected to lift prices up about 4% this year, says Cahners Economics. Still, compared to the early 1980s and 1970s, this price rise is modest. The wage-inflation link of the 1970s appears to be broken and commodity markets are still depressed. So inflation will not be the buzzword this year.

Digital bipolar ICs
Producer prices of digital bipolar ICs have fallen every quarter since the spring of 1986 and they fell again in the last quarter of 1987. A fourth quarter 11.6% year-ago drop pushed this components annual producer price index to its lowest level since mid-1983. Prices of this product are typically volatile: they rose 20% in 1983 and plummeted 21% in 1978. With demand expected to pick up this year and leadtimes stretching, Cahners Economics forecasts digital bipolar prices will rise 8.6% in 1988.

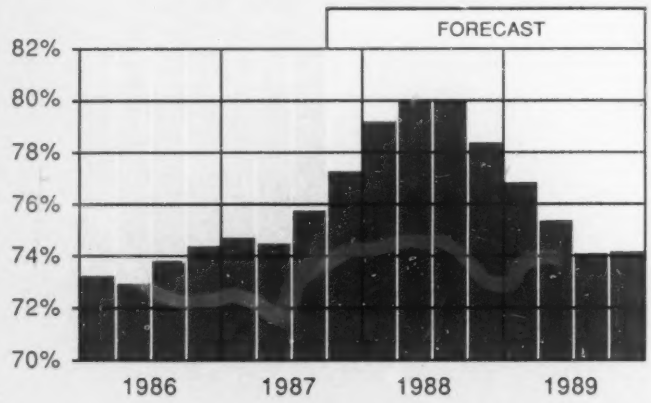
Digital MOS ICs
A 0.5% gain in the final quarter of 1987 from a year ago was not enough to stem the general deflationary trend for digital MOS IC prices. For 1987 as a whole, MOS prices fell 0.9% on the heels of a 10% drop in 1986 and an 18% decline in 1985. Leadtimes, the time between placement and delivery of an order, for all digital ICs rose slowly in 1987, rising just 0.7% after a sharp drop in 1986. Obviously, the delicate supply-demand balance is holding relatively calm so far. The outlook, however, is an 8.6% price increase in digital bipolar ICs this year, before prices are slashed once again in 1989.

Linear ICs
Prices of linear ICs fell just 0.1% in the fourth quarter of 1987, compared to a year earlier. Overall, linear IC producer prices dropped 4% in 1987, continuing the deflationary trend established in the past two years. Leadtimes also dropped significantly in 1987, suggesting that excess supplies are available. So rising price pressures will be least severe for this product. Cahners Economics expects linear IC prices to accelerate just 2.4% in 1988, followed by another 2.9% price drop the following year.

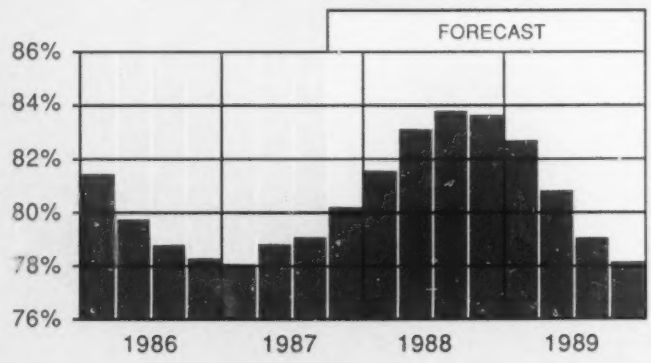
Plant utilization

Average percentage of capacity utilized per quarter, seasonally adjusted

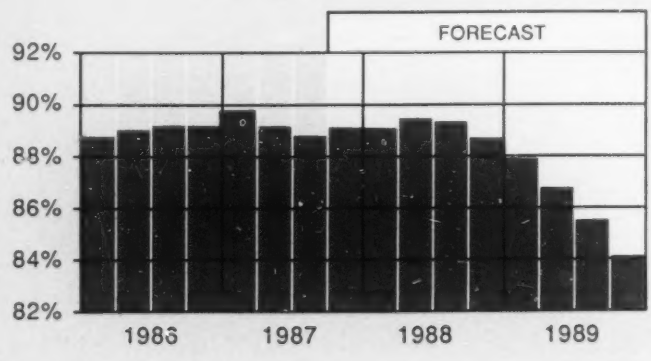
Electrical machinery (SIC 36)



Instruments (SIC 38)



Aerospace (SIC 37)



Historical data: Federal Reserve Board; Forecast: Cahners Economics

Electrical machinery

Manufacturers of electrical and electronic machinery operated at an average 75.7% of capacity during the July through September period, up from 74.5% in the second quarter of 1987. This industry is forecast to increase new plant and equipment spending in 1988, up 7.5% over last year, as new capacity is needed to keep up with rising demand. Production is expected to jump over 8% this year, which will in turn push operating rates up 4% by midyear. Manufacturers will easily operate above their 20-year average of 78.2%, but will stay just below the peak rates achieved in 1984.

Instruments

The factory operating rate of the instruments industry has been rising, from 78.2% in the first quarter of 1987 to 78.8% in the second quarter, and up to 79.1% in the third quarter. Increased demand for instruments, particularly those to ensure quality, will increase production and put pressure on current plant capacity. Operating rates will edge closer to the industry's 1967-1986 average of 83.2% and will surpass this rate by the end of 1988. However, because the current expansion is more muted than the last, the operating rates will remain below the peak level of 85.6%, hit in the boom year of 1984. Expect utilization rates to drift downward to the 78% to 79% range by the end of next year.

Aerospace

Capacity utilization for aerospace manufacturers is diminishing. The third quarter average of 88.9% was down from the 89.8% recorded for the first three months of last year. The production outlook for aircraft, missiles and parts is in sharp contrast to the recovery in other industries. Growth in factory output peaked in mid-1986, while most industries were in the midst of a slump. The tables will turn by the end of 1988, however, as the aerospace industry feels the pinch. Record high backlogs of $149 billion at the end of October will provide a production buffer in 1988, but with several defense procurement programs completed and no new programs in the pipeline, operating rates will drift downward through 1989.

MATERIALS

Latter-day laminates: fewer makers, but better quality

Circuit-board makers may soon have an improved product to work with as their suppliers of laminates merge

There are no longer as many companies making materials for printed wiring boards. But the ones that are left are bigger, and tl·ey're stepping up investment in the sector. The result? Users should see higher quality products.

Consolidation has been particularly evident over the past several years in the laminates industry, the largest sector of the printed wiring board materials business. U.S. electronics producers used $781 million worth of laminates in 1987, accounting for more than half of the $1.3 billion total U.S. PWB materials market, according to Strategic Analysis Inc. of Reading, Pa.

Not so long ago, the laminates industry consisted of giants General Electric Co. and Westinghouse Electric Corp., at the one extreme, and a host of small companies at the other. Some in the industry suspected the giants of not paying much attention to the tiny and unexciting laminates business. But the small producers were short on capital and had trouble just surviving through cyclical downturns, to say nothing of maintaining heavy investments in next-generation products.

Now, consolidation has brought a whole new lineup of more evenly matched players. The $2 billion British conglomerate Cookson now owns Polyclad. Allied-Signal Inc. bought Norplex, which had itself just acquired Oak. Westinghouse folded in Fortin. Hercules Inc. purchased Mica Corp. And $585 million Bairnco Corp. is building a portfolio of laminates firms, starting with its acquisition of Howe and the Cuclad product line from 3M Co., now known as Keene Technologies.

"Consolidation is making the competition more even," explains Donald Pucci, vice president for technology at Hadco Corp., a leading producer of printed wiring boards and a major user of laminates, located in Salem, N.H. "We will have five to seven really major league suppliers, and that will be good for us in quality, if not so much in price. Before, people undercut each other in price so much they couldn't survive. Now they will maintain prices and work on quality and engineering. They'll be able to spend for more and better engineers."

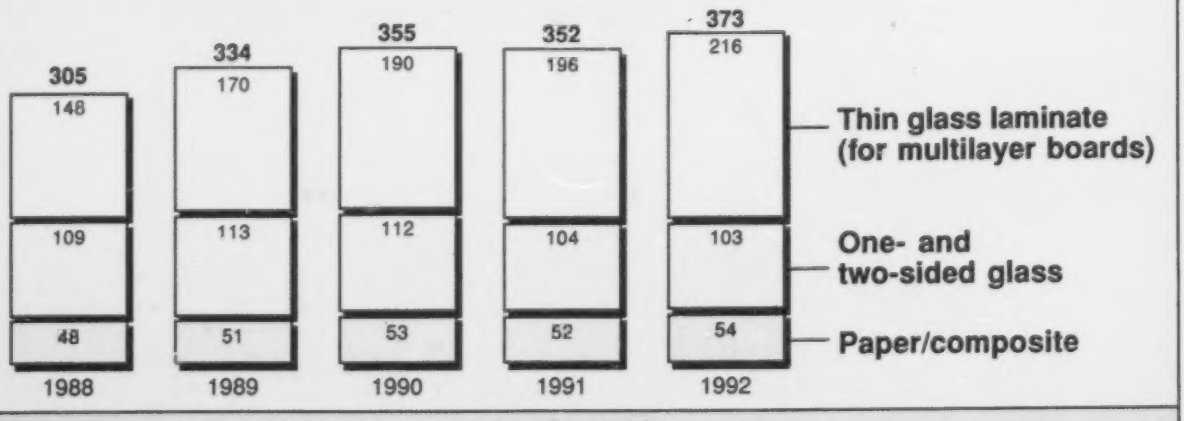
"Now the industry will survive — it's getting critical mass," points out Richard Hurlbut, manager for marketing and sales for GE's electromaterials department, which makes GE's laminates in Coshocton, Ohio. Hurlbut adds: "It could easily have disappeared."

Largest of the reorganized players is Allied-Signal's Norplex/Oak Inc. Norplex and Oak were each already among the biggest of the small fry. Now they make up a $350 million division of a $12 billion corporation. With Oak, Norplex added important manufacturing sites in Asia, backward integration into resin and copper foil, and new flexible and microwave laminate products. With Allied, it added deep pockets.

"Our capital expenditures now are four times what they were at Norplex alone," says David Verbeten, the company's director for product marketing. "We'll be spending $20 million to $30 million a year." Investments will go for more sophisticated new equipment which can be controlled more definitively for tighter

Thin glass laminates for multilayer boards will be in hot demand as the sparkle goes off one- and two-sided glass

Rigid laminate consumption in North America (millions of square feet)



Source: Rose Associates

tolerances and environmental controls. Another big chunk of spending will go toward making the cleaner materials needed for producing extremely fine circuits. Currently, about 25% to 35% of capital spending goes for clean materials. In years to come, the company estimates that figure will grow to as much as 60% to 65%.

"Our R&D spending has increased dramatically," Verbeten adds. "About 20% of our investment expenditure will go for R&D." The company is building a new $3 million R&D center at its headquarters in La Crosse, Wis., and is undertaking joint projects in basic materials science with Allied-Signal's laboratories.

"Norplex is the industry leader in technology," notes Daniel Rose, of materials consulting firm Rose Associates in Los Altos, Calif. "They run the business as a high-technology business and they want to stay in it. When [Allied chief executive Edward L.] Hennessy ordered his troops to sort through Allied's portfolio, the dogs — including many electronic materials companies — went to Henley [an independant spin-off of Allied]. But he kept Norplex. That's a great vote of confidence."

Polyclad executives say their research spending will also increase now that the $100 million Franklin, New Hampshire-based laminate maker has a new $2 billion parent. But only a few months into the marriage, budgets have not yet been set. "The acquisition," notes Polyclad vice president for marketing Richard Costello, "will give us the financial strength to expand or acquire, to more rapidly achieve our five-year plan, which is to double our sales."

There's apparently more industry rearrangement to come. "Consolidation will accelerate," asserts Arthur C. Williams, vice president for international marketing for Keene Corp., Bairnco's laminates subsidiary. Williams adds:"But then I'm in the unique position of making my prediction come true, because I'm going to do it. My job is to buy companies. Many small companies in these businesses are hitting the wall as we move to extremely fine lines and fine circuits. In order to just stay in the game they have to go back and bet the house again, for things like computer driven presses and clean rooms that we didn't use five years ago."

Keene is shopping for more $10 million to $20 million niche businesses to add to its already acquired polyimide and fluorocarbon film lines. Similar to how Bairnco operates in other businesses, the idea is to combine a number of smaller companies in a field, keep the management, bring in more sophisticated marketing and financial disciplines, expand the business to $100 million to $200 million in annual sales, and then spin it off to its shareholders.

U.S. electronics producers used $781 million worth of laminates in 1987, accounting for more than half of the U.S. PWB materials market

Users should benefit as these more balanced competitors turn their attention to quality improvements. "The biggest trend I see," notes Jonathan Avins, a consultant with Strategic Analysis, "is that users will become more critical of existing products and demand higher quality, higher value added."

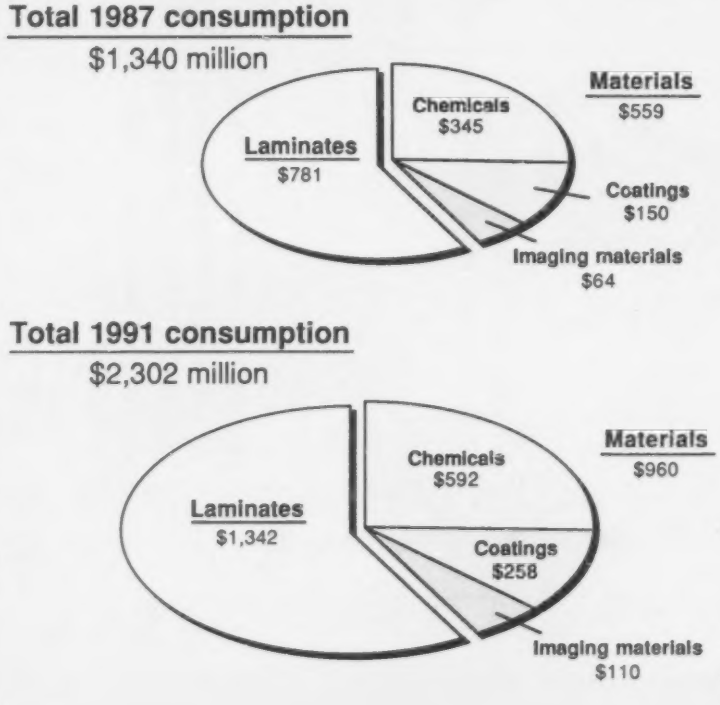
First on the users' wish list, according to consultant Rose, is getting the epoxy formulation under control so that the printed wiring board doesn't warp. The thin layers in multilayer boards shrink or grow unpredictably when processed, making it difficult to keep the layers aligned when drilling tiny holes. "The major issue in our mind is dimensional stability," says Hadco's Pucci.

That issue has yet to be resolved. "There could be an entrepreneurial solution, but probably the entrepreneur wouldn't know what to do with it," adds Pucci. "Most likely, a big company will solve the problem."

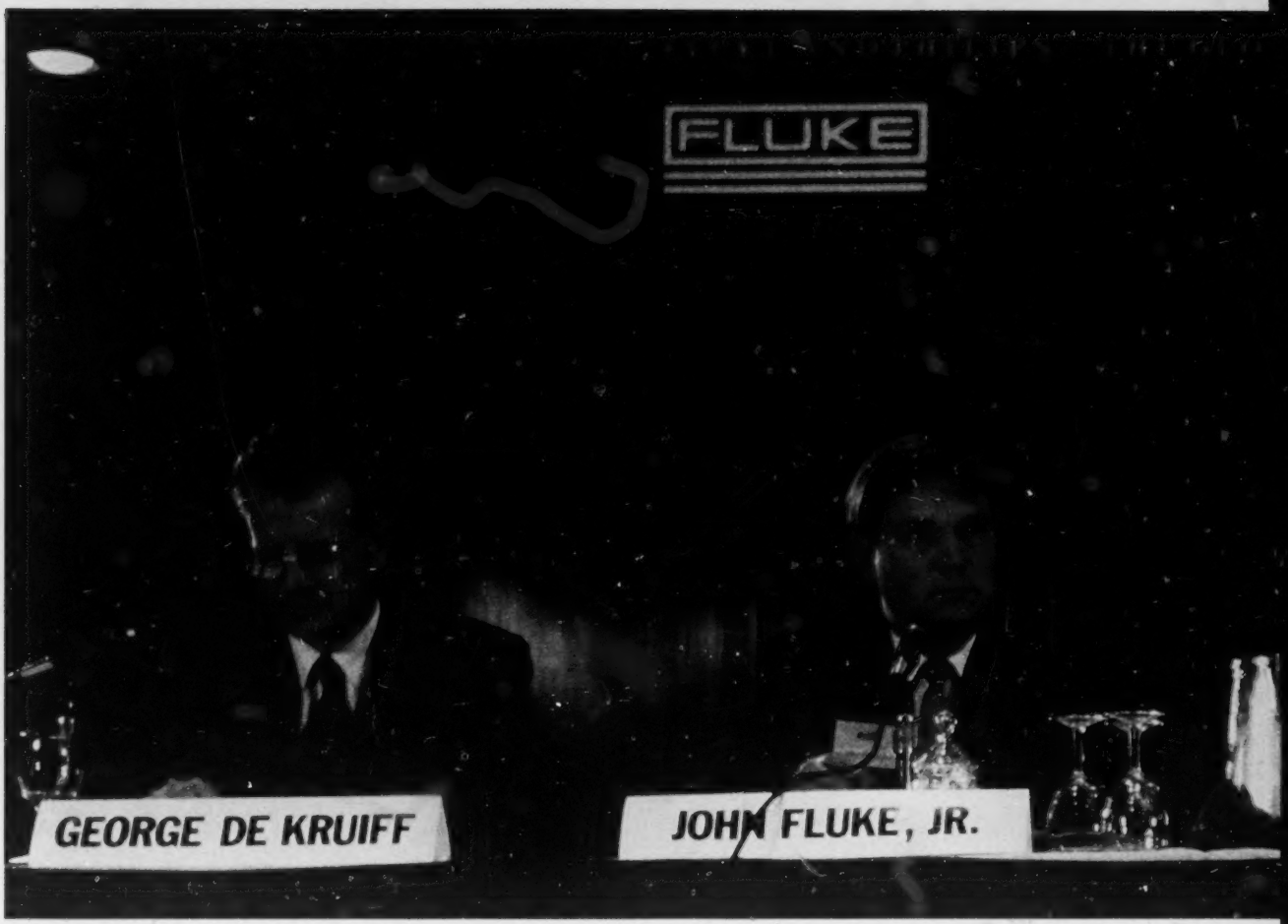
PAULA DOE

Laminates dominate printed wiring board materials market

U.S. consumption, merchant and captive ($millions)



Source: Strategic Analysis Inc.



THE GEORGE, JOHN, BILL & GEORGE SHOW: chairman John Jr., CEO Winn are joined on the board of the new-look Fluke by Philips

TEST & MEASUREMENT

Fluke/Philips:

The combo may team on manufacturing too

Dutch giant Philips' stake in John Fluke Mfg. makes a strong No. 3 in the instruments market. So why aren't HP and Tektronix impressed?

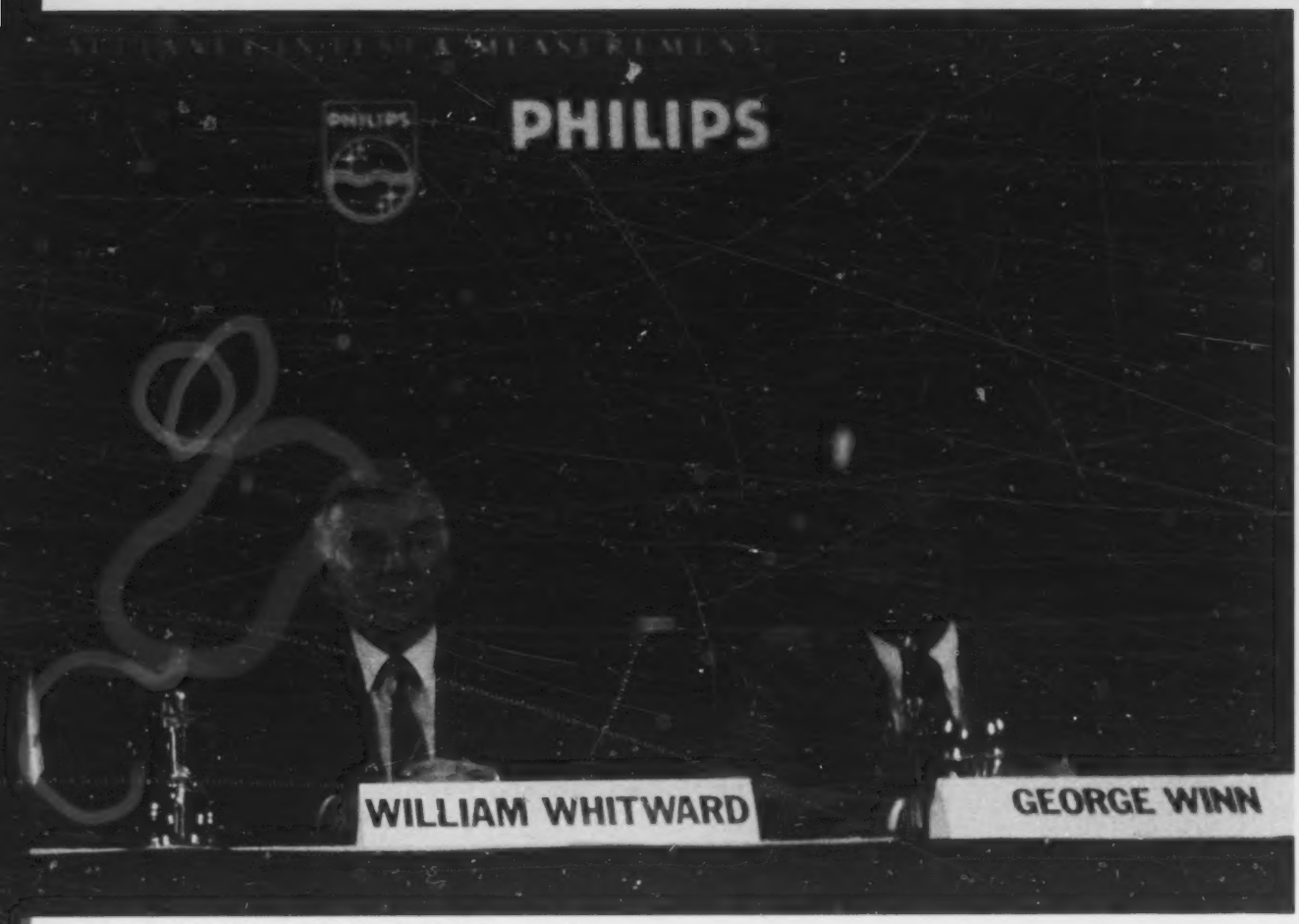
By David Card

Never before has the sleepy test instruments industry looked so international.

Consider the following hypothetical scenario: An American company with a Dutchman on its board, selling test instruments designed by Canadians but made in the Netherlands by a factory run by a South African, operating software from a company owned by a Swede.

The American company is the Everett, Washington-based John Fluke Manufacturing Company Inc. The Dutchman on its board is George de Kruiff, senior managing director of N.V. Philips' Industrial and Electroacoustic Systems Division. Last fall, the $27 billion Philips empire bought a $16.5 million piece of Fluke and a seat on its board of directors to seal a joint marketing and development deal. Joint manufacturing will probably follow.

Fluke, in turn, took a $6 million equity position in Hilevel Technology Inc., a small California tester company run by Sweden-born Bjorn Dahlberg. This month, Fluke is introducing a new model in its digital tester/troubleshooter line; the tech-



executive de Kruiff. Philips T&M chief Whitward has a say too

nology for which Fluke bought from Canadian start-up Innovage. Fluke also has an equity position and a seat on the board of Innovage, as well as an exclusive manufacturing license.

Something was needed to pep Fluke's performance and to give it more clout in the test and measurement arena. Although it is a leader in handheld instruments, Fluke, whose sales have hovered around $200 million for the last four years, looks puny compared even to No. 2 in worldwide T&M markets, Tektronix Inc., which celebrated its 40th birthday two years ago with $1.4 billion in sales. By contrast, Fluke's 40th fiscal year, which ended Sept. 28, 1987, showed $206.3 million in sales for after-tax profits of $2 million. Profits were hurt by the $7.5 million in restructuring costs which the company soaked up because of the Philips deal.

Observers believe they know why Fluke sought a major partner. " 'How far can you go as an independent company?' they asked themselves at Fluke," says Fluke watcher Jay Cooper, an analyst at investment brokerage Eberstadt & Fleming Inc. "Their conclusion was: no farther, without help." Cooper adds that a lot of Fluke's instrument business — laboratory multimeters, calibration equipment and even handheld meters — is in "quasi-mature" markets.

Fluke chairman John Fluke, Jr. admits that he would like to expand Fluke's reach. Under the Philips deal,

Analysts say that what the two companies do in the way of development is more important than what they do in marketing

the two companies will resell each other's instruments in assigned countries. "The product categories we're in today give us access to maybe a third or a little more of the total T&M market," he says. Market research firm Prime Data Inc. tabs the world T&M market at $7.2 billion in 1987, including $5.5 billion in instruments. "This Philips product line is pretty much in the other two-thirds," Fluke continues. "So obviously, the growth potential is very good. I have to concede that part of what's driving our interest is that we have enlarged our market. Substantially."

In its "overall strategy to be better marketed," Philips' alliance with Fluke makes for a "very clear No. 3" in instruments, according to Philips' de Kruiff. And that may be asking for trouble from the industry duopoly, Tektronix and Hewlett-Packard Co. While a pair of $200 million instrument companies, each with its own niche (Fluke in service test, Philips in Europe), doesn't attract undue attention, the combined $400 million venture, with a product line that overlaps completely, might even draw notice from market giant HP.

The instruments market has been cut up and dished out. Tektronix owns the $1 billion oscilloscope market and leads the $300 million logic analyzer segment as well, according to Prime Data. HP is first in just about every other segment. So much for the Fluke/Philips team? "It's a bigger deal for Fluke than it is for the industry because the industry is so oligopolized, with Hewlett and Tek so strong," says Eberstadt's Cooper.

Adds analyst Galen Wampler of Prime Data: "The people they will hurt the worst are the smaller people. HP and Tek will feel it, but not dramatically."

Competitors are at least more aware than they were. William Terry, executive vice president in charge of HP's Measurement Systems Sector, says that before the Philips/Fluke deal, he didn't even know who was in third place. "This probably does make them a clear No. 3," he says. Terry is intrigued by the deal; he says that he's never seen such a two-way reselling arrangement in the test industry. He thinks the two could be heavyweights in setting international standards.

"There's an advantage in having a reasonably broad product line," Terry continues. "If I take a current HP catalog and put a paperclip around the pages that Fluke competes with, it comes to, oh, 12 to 18 pages. If I clip Fluke and Philips together, it gives 80, maybe 100 pages. That's out of 800."

Second place Tektronix is similarly unfazed. Comments executive vice president Willem Velsink: "Philips in the past has not been extraordinarily successful in these types of deals." Velsink concedes that the product lines of the two are complementary, but he thinks their cultures may not be. "Philips is a marketing, authoritarian type of company," he says. "That'll go over like a lead pipe at Fluke."

John Fluke, Jr. has a quick reply to that: "There's no aspect of this agreement that requires any co-mingling of corporate cultures. We want to be us and they want to be them."

Fluke president and chief executive George Winn says that two years ago the company reorganized its salesforce along market and key account lines, away from its traditional product orientation. But to make that sa lesforce efficient, they needed to have a bigger "market basket" to offer the customer. "The age-old way to do that is to make a bunch of acquisitions," Winn says. "If you don't like to do that, you become a marketing company. You become a rep."

Philips and Fluke are doing joint market research and setting up a seed fund for potential start-ups

So Fluke became a rep. The company will sell and support Philips products — including oscilloscopes, logic analyzers and microprocessor development systems — in North America, Japan, Israel and China. Philips will return the favor elsewhere in the world.

Winn thinks the new product lineup will help level the proverbial playing field. "Hewlett-Packard has historically been a one-stop shopping center," he concedes. "We're not where Hewlett-Packard is, but we've made a lot of progress." All that efficiency of sales that Fluke hungers for, HP has in spades. An HP salesperson can walk up to a customer with the catalog that the industry refers to as the instrument wish list. On top of that, with the industry-standard General Purpose Interface Bus (GPIB) — previously the *HP*IB — and with HP computers, that salesperson can put together a rack of instrumentation and software geared to test automatically a given electronic component or subassembly.

"We're going to have to do a better job of how our system elements work together and how our software works in," Winn says.

Sealing the deal

"We probably talked to 10 different test and measurement and related companies in our search for a fit that would accomplish our objectives of expanding our solutions to the customer, creating an environment where we could get more sales efficiency and grow in a nongrowing test instrument environment," Winn says. To give the deal a little staying power, Philips acquired a preferred class of Fluke stock that, if converted, would total 7.5% ownership of Fluke. "We did not want in any relationship we got into, to have it just be some kind of marketing thing. The customer is pretty smart. He's seen an awful lot of marketing agreements come and go," Winn says realistically.

Philips director William Whitward, head of the Dutch giant's Test and Measurement business unit, echoes similar sentiments. "We wanted to show continuity in a marketplace where shakeouts are occurring regularly." Philips also looked around before signing on. Figuring that the United States was worth some 48% of the global instruments market narrowed the field. "To use a Japanese company to get into the U.S. market sounds a little paradoxical," says Whitward. The two biggest U.S. instrument companies, HP and Tek, were out of the question because of directly competitive product lines, he says. There is little or no overlap between Fluke's instruments and Philips'.

The deal goes beyond selling each other's lines. In fact, according to Prime Data's Wampler, what the two companies do in the way of development is more important than what they do in marketing. It is too early to predict what Fluke and Philips will come up with, Winn says, but staff from both companies are sniffing out

AT A GLANCE

John Fluke Mfg. Co. Inc.
Everett, Wash.

	FISCAL YEAR COMPARISON		
	1987	1986	Change
Sales ($ thousands)	$206,328	$209,030	-1.3%
Net income ($ thousands)	$2,005	$12,156	-83.5%
Net income/sales	1.0%	5.8%	—
Cost of sales/sales	46.7%	45.8%	—
R&D/sales	10.8%	11.5%	—
Marketing, G&A/sales	24.3%	22.3%	—
Capital expenditures/sales	4.0%	4.3%	—
Number of employees	2,400	2,500	-4.0%
Sales per employee	$85,970	$83,612	+2.8%
Net income per employee	$835	$4,862	-82.8%
Current ratio	2.23	4.42	—
Debt/equity ratio	0.01	0.13	—

Fiscal year ended September 25,

Source: Company reports, ELECTRONIC BUSINESS

possibilities. "Of course, Philips has a tremendous technology base," Winn understates. "They've got 4,500 research engineers." Fluke is particularly interested in Philips' video expertise from its television products, its digital/analog conversion technology and its ability to squeeze multiple functions into a single integrated circuit.

The two are doing market research and setting up a seed fund for potential start-ups, Winn says. He won't say how much money is involved. The joint venture could go a number of ways: "We could go outside and buy somebody. We could go outside and appoint a president and have him start hiring engineers and start something from scratch. We can make some complement of Fluke people and/or Philips people," Winn says.

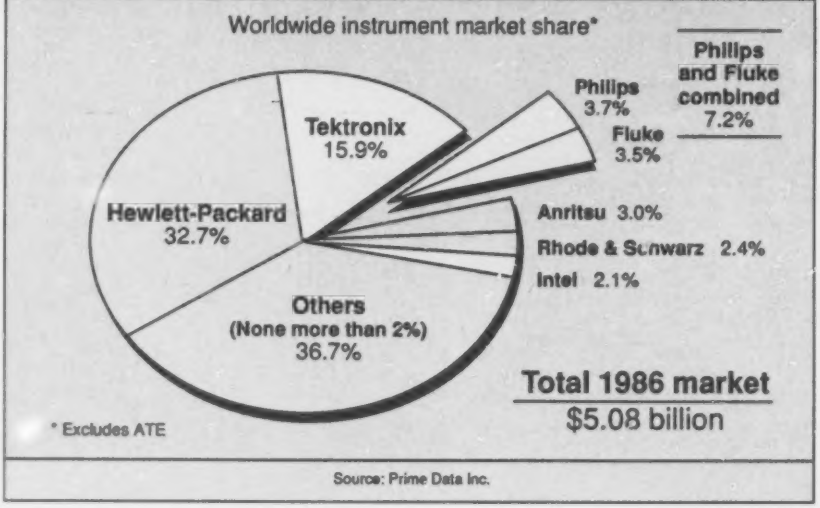
Single-site manufacturing

John Fluke, Jr. is operating under a long shadow. His father, John Fluke, Sr., is an industry legend, a garage-shop founder. At Fluke headquarters in Everett, next door to Boeing Co.'s jumbo-jet plant, there is a memorial display for John, Sr. that is uncannily like a shrine.

One of the legacies the elder Fluke handed down was a fierce pride in his company's manufacturing expertise. But the company may have to swallow a little of that pride. John Fluke, Jr. is quick to praise his factory team that "makes it so that we can continue to build handheld meters right here in little old Everett, and compete successfully with the Japanese and the Koreans and the Taiwanese not only here in the United States, but compete with them successfully on their own darn soil." Indeed, observers credit Fluke with about half of the world market in handheld meters.

Fluke manufactures the whole thing, too. Holding up a benchtop instrument, a Fluke manufacturing manager boasts that his company makes everything from the resistor networks to the plastic casing. "We make everything in this except the plastic feet on the case," he says. "Well, maybe I'm wrong. I think we do make the feet." But the amount of automation necessary to build instruments, Winn says, makes the potential double efforts of Fluke and Philips inefficient. "So we're probably going to evolve into single-site manufacturing for the majority of the instrumentation of the future," he says.

Fluke/Philips makes for a strong No. 3, but is it strong enough to crack HP and Tek?



Source: Prime Data Inc.

Winn doesn't see much chance of Fluke taking over the manufacture of Philips instruments. Still, John Fluke, Jr. does point out that the bids on government instrument contracts — 13% of Fluke's business is with the government — are so close to manufacturing costs that some Philips products may migrate to Everett. A big Air Force oscilloscope contract has Philips salivating, says Prime Data's Wampler.

On the other side of the Atlantic, Fluke has a plant in Tilburg, Holland,

This opportunity to jump-start Philips' U.S. business does not come for free; Fluke is handing over its European business to Philips

that was conspicuously not included in the deal. Historically, Tilburg builds 35% to 40% of what Fluke sells in Europe, Winn says. "The amount of new product we're putting in there is not satisfactory to keep that factory growing," he admits. Philips could easily pick up the manufacturing done in Tilburg.

Besides new competitors, Fluke is faced with new customers. The bulk of the new-to-Fluke instruments — analyzers, signal sources, scopes and microprocessor development systems — are bought by design and manufacturing departments. How much experience does Fluke have selling into those areas? "Not a hell of a lot," says analyst Gerald Fleming of brokerage Bear, Stearns & Co. "The troubleshooter product has been successful going into manufacturing, but historically they've always sold into the service sector."

Potential risk

"You've hit on an area of potential risk," admits John Fluke, Jr. "We do have to develop a lot of new relationships with the design-engineering function of the companies we call on. The good news is that we've been calling on those companies for years. The calibration lab manager who has to maintain all that stuff knows us and thinks we're good.... We've got to convince them that we can supply them just as well as we supply their associates in the manufacturing, test engineering and field service engineering sections of their company."

Of course, this is not the first time Philips has tried to sell instruments in the United States. Philips has been trying for years. Eberstadt's Cooper says the Dutch company's sales never topped $15 million or $20 million stateside. Fleming of Bear, Stearns is blunt: "Philips had a horrendous record in the United States, with minimal success pentrating the market."

Philips' instruments chief Whitward admits that his company's previous attempts to gain U.S. ground "did not meet the targets we wanted," but blames it on the fact that Philips "hadn't found a good partner." He ranks Fluke's top two contributions as salesforce and name recognition, respectively.

Lisa Henderson, an international buyer for Siemens Corporate Research and Support Inc. in Iselin, N.J., says she has "very cordial rela-

tions" with Fluke and buys calibrators and interface boards from them. Her division helps buy for Siemens locations around the world. But she says she has never bought Philips logic analyzers, for example, going with models from HP or Tek instead. "I can get much better competitive prices with U.S. vendors," she says.

The weak dollar is helping ensure that Philips products are costly for U.S. buyers. But pricing surely is not the only issue. Was it the equipment itself? A year and a half ago, Fluke, as a precondition of the joint deal, took apart and thoroughly evaluated copies of the 20 major Philips products that Fluke expects to push most heavily. "We wanted to assure ourselves that Philips wasn't having trouble in the U.S. because of shoddy product quality, or excessively high component counts because they hadn't used the latest technology, or lousy manufacturing methods or whatever. And what we discovered is that many of these products are really impressive," says John Fluke, Jr.

So if the Philips instruments stacked up for technology, what was the problem? Dennis Pinnecker, an operations manager for Rockwell International Corp.'s Autonetics division in Anaheim, Calif., thinks he knows. Pinnecker has bought plenty of Fluke instruments among the 60,000 or so items of test equipment that Rockwell Autonetics uses in making guidance systems for nuclear missiles and submarines. "The instruments looked good, their maintainability looked good, but the main bugaboo was support," Pinnecker says.

He cites the long support chain, the warranty and a lack of staff on Philips' part as three strikes against the big Dutch company. Now that Fluke is in the picture, he is willing to take another look.

Fluke's fix for Philips

Meanwhile, John Fluke, Jr. has plenty of explanations for why the things that hurt Philips before, are all fixable by Fluke:

- "Now, we know from our surveys here in the United States that for some reason [Philips] has gotten a less than ideal reputation for field service. But we also know we can fix that.
- "Quite frankly, the people running the T&M portion of the Philips national sales organization probably found it difficult to get the level of resources they needed, and understandably so.
- "The number of layers between the people who run our data-processing organization, between those guys and the feet-on-the-street sales guys, you can count on one hand.
- "In the Philips organization . . . if a salesman wanted to pull up on the tube some information about customers, first of all, they didn't even have good computerized systems. Secondly, if he wanted that, he would have to go up through 20 layers of management, through international to home headquarters corporate interfaces, to some guy way up in the corporate castle to get a modification on a particular data-processing program. Here, our data-processing guy is requested occasionally to go and talk to the sales management in the field.
- "There's no one thing you can put your finger on. It's maybe the extent to which senior management of each

Fluke fallout in France

Not surprisingly, European distributors of Fluke's products are far from delighted with the Fluke/Philips alliance. In Britain, Germany, the Netherlands, Belgium and Luxembourg, Fluke has conducted its own selling. But in France, a major market, Fluke's products represent 30% of the distribution business of M.B. Electronique, based near Paris.

"It's certainly not good news for us," says Michel Brunswick, M.B.'s president. "However, Fluke has behaved correctly in giving us fair notice. Before the present contract runs out at the end of 1988, we shall have time to find new brands to sell. But we would need eight newcomers in our catalog to replace as big a name as Fluke."

JACK GEE

The Hilevel deal: Getting closer to CAE

Another deal may be getting ignored amid the Philips/Fluke hoopla — a deal that "could potentially be an excellent addition" for Fluke, according to Bear, Stearns analyst Gerald Fleming. That's the $6 million deal that John Fluke Manufacturing Company Inc. cut for 25% ownership of Hilevel Technology Inc.

Hilevel, of Irvine, Calif., makes a new breed of automatic test equipment to "verify" ASIC chips. In price and function, verification systems fit in the instrumentation spectrum between logic analyzers and million-dollar ATE systems. Typically, design engineers, rather than test engineers, buy the verifiers, which sell for anywhere between $50,000 and $250,000. The nascent market has spawned a handful of start-ups and drawn serious attention from the big T&M companies.

"Fluke was very interested in participating, not in ASIC design verification or ASIC component test — Hilevel's business — but in having the know-how to do digital board test for boards that contain ASICs," says Fluke chief executive George Winn. So Fluke took an option in Hilevel, which was looking for money at the time, and got access to Hilevel software and pin electronics.

Hilevel makes ATE equipment to "verify" ASIC chips

Hilevel president Bjorn Dahlberg — who claims his company had $12 million in sales last year and was "very profitable" — says he thinks Fluke wants to leave his company independent. Joint marketing does not make much sense yet, Dahlberg says. "Our strength is in engineering labs and my guess would be that Fluke is strongest in manufacturing."

Analyst Galen Wampler of market research firm Prime Data Inc. likes the deal. "They [Fluke] have to get closer to computer-aided engineering, and Hilevel helps," he says. Hilevel's software translates data generated by CAE simulators into a form that can be used by Fluke's functional board tester, which sits at the low end of the ATE market. □

of the two organizations would pay attention to people. I go on sales calls all the time with salesmen . . . I don't think the head guy at Philips ever made a sales call with any of the salespeople. That's not a criticism of them — how could he possibly do it?"

John Fluke, Jr. makes a good case. A consensus of his customers, competitors and investment analysts shows that Fluke has a solid service and support organization. Competitors give its computerized sales-support system rave reviews.

Of course, this opportunity to jump-start Philips' U.S. business does not come for free. Besides the restructuring costs, which forced Fluke to take a loss for the fourth quarter, Fluke is handing over its European business to Philips.

Twenty-two percent of Fluke's sales were in Europe last year, and it was a profitable business. John Fluke, Jr. reasons that if around a quarter of the world's instrument business is in Europe, Fluke was doing pretty well. To do better would have called for heavy expansion, he says. Fluke had wholly owned subsidiaries in England, West Germany, Belgium and the Netherlands. Contracts with reps elsewhere in Europe are being allowed to run out.

John Fluke, Jr. says the company "agonized" over the decision to dismantle its organization over there. "But the problem is," he says, "particularly in the military and aerospace markets in Western Europe, if you're not a European company, you're going to have an awful hard time getting your fair share."

Fluke admits that the five-year marketing agreement could be dissolved, at which time Philips could begin acquiring Fluke common stock

What's going to suffer is Fluke's profit margin. Winn says that typically, a rep gets a 12% commission, while distributors that stock equipment "operate in instrumentation, someplace between 20% and 30%." He adds: "Our decreased margin from products in Europe is going to be about balanced by decreased cost."

"The last issue is," according to Fleming of Bear, Stearns, "is this ultimately the first step toward a marriage? I don't know. There appears to be a desire on the part of John, Jr. to move away from the business. I think Philips has a high level of interest in acquiring U.S. properties."

Eberstadt's Cooper sees logic in that. "American companies are on the bargain counter now. I would bring the dollar-versus-guilder argument right up front. Philips is no different than the Japanese companies to an important degree — they have to get into the low-currency countries."

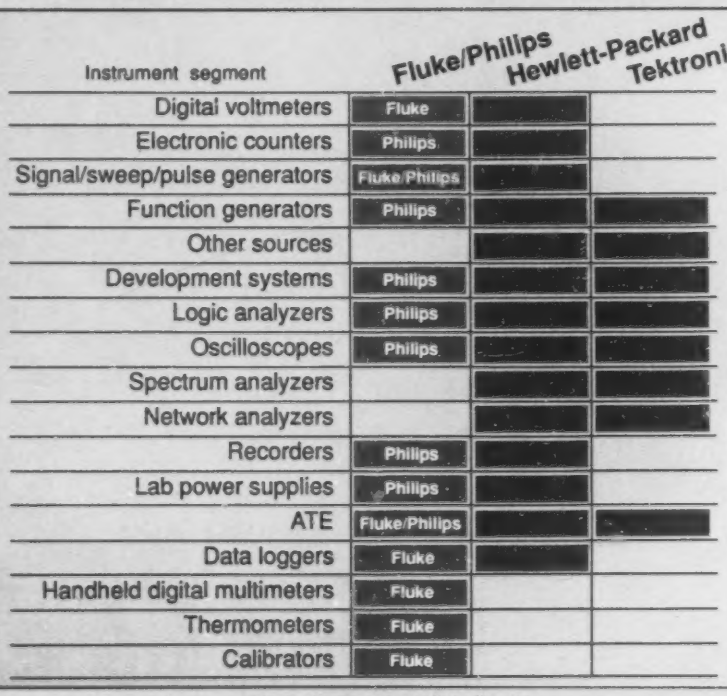
John Fluke, Jr. himself denies that he's pulling out of the business, though he just recently turned over the chief executive title to Winn. When asked if a marriage is indeed in the works, he only half-jokes: "I think Philips is pretty sure we're not going to buy them. They're a hundred times our size." More seriously, he admits that Philips could easily swallow Fluke. "But the fact is that, in our lengthy and detailed negotiations, it was apparent that they [Philips] really had no particular intent of attempting to buy this company."

An "airtight" standstill agreement ensures independence, John Fluke, Jr. says. But airtight is a relative term, it turns out. When pressed, he admits that the five-year marketing arrangement could be dissolved, at which time Philips could begin acquiring Fluke common stock.

Speculation aside, John Fluke, Jr. says he wants to be sure that the deal doesn't get overplayed. "The performance of the core company, the company less Philips, is as critical as it ever was," he says. "Bear in mind that the Philips products come in here at some transfer price. That cost of goods is definitely higher than the cost of goods sold for Fluke products. We cannot afford to have our field salesforce out there meeting its dollar-volume quotas, but doing it by selling relatively more of the Philips product line than was forecast and relatively less of the core company's. That is an intolerable outcome."

John Fluke, Jr.'s hope is that the companies' extended product line, plus Fluke's service and support, will prove an irresistible combination. If it is enough to make a potential customer call "this vendor called Fluke with the Philips flag over the top" before calling his competitors, that in the end is all that Fluke wants. □

Fluke/Philips' expanded product line goes head-to-head with HP's and exceeds Tek's



Source: Company reports, Prime Data Inc.

Computer Business

EUROPEAN PCs

The rise of the European PCs
Europe lags the U.S. in many market segments. PCs are no exception.

Page 122

MINISUPER-COMPUTERS

Minisupers: Prices cut; competition's up
The maturing minisuper market is crowded and suffering from price declines. A shakeout's coming.

Page 128

INFORMATION SERVICES

Baby Bells entering a risky business
The seven RBOCs are going after the videotex services market. BellSouth leads the way.

Page 134

COMPUTER FOCUS

DEPARTMENTAL COMPUTERS

DEC could surpass IBM in midrange market share

IBM's tenuous lead in the departmental computer market may vanish this year if the balance tips in DEC's favor

The departmental computer market is known as Digital Equipment Corp.'s bread and butter. It is also known as the bane of IBM's existence. DEC is known for its strengths while Big Blue is recognized for its weaknesses. Despite that fact, IBM has always held the lead share of that market. According to a survey of 1,045 companies conducted by The Sierra Group, last year IBM accounted for 18.6% of the departmental computer market while DEC held second place with 13.6%.

That may change this year. For the first time since the inception of the departmental computer market, IBM may lose its first place status.

The Tempe, Ariz., market research firm survey included companies from eight major vertical markets with revenue ranging from $10 million to $3 billion. Of those surveyed, over half said they would purchase more departmental systems this year. Of the DEC users, nearly 60% were planning to buy computers, while about 51% of the companies with departmental systems installed had minicomputers from more than one vendor. Less than 1% reported having machines from more than two vendors.

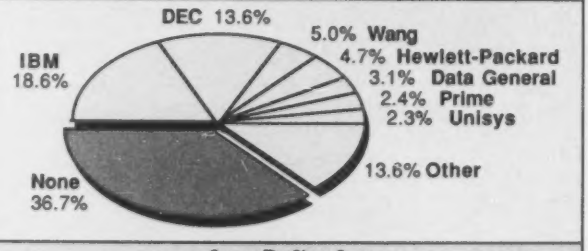
Of the companies surveyed, 36.7% did not have departmental systems installed. Of those, 21.7% said they would install departmental machines within the next 12 months.

About 37% of those companies with IBM mainframes did not have departmental machines. But nearly 27% of those customers plan to purchase minicomputers in the next 12 months.

That does not necessarily guarantee sales for Big Blue, however. DEC sold almost 15% of the departmental systems used in IBM mainframe accounts, second only to IBM's 30.9% share of that segment of the departmental computer market.

The most active customers, says the study, will be scientific and engineering users. About 51% of the respondents from that vertical market plan to increase expenditures on departmental systems this year.

Departmental computer market



Source: The Sierra Group

PERSONAL COMPUTERS

The rise of the European PC industry

Europe lags the U.S. in many market segments. PCs are no exception. Look for strong growth this year

By Jack Gee

It took Europe three years to catch up with the United States in rolling out the red carpet for the personal computer. But since 1984, when the first pioneer machines were installed on desktops in Britain, France, Germany and neighboring countries, diffidence has given way to enthusiasm.

The advent of a younger generation of more powerful and versatile models from both European and U.S. manufacturers is being celebrated with applause — and bulging order books. And, like 70% of the 2.7 million PCs shipped in Europe last year, most of these new purchases will be produced at European plants.

"There's a big potential for Europe's PC business," says Brigitte Morel, cofounder and joint managing director of Intelligent Electronics Europe, a microcomputer market study firm based in Paris. "Volume growth might drop from over 30% in 1987 to around 20% this year. That could be one of the effects of the world financial crisis. But, in any other industry, a comparable rate of development would be regarded as amazing."

However, Hans-Dieter Wendorff, senior vice president, products, at West Germany's Nixdorf Computer AG, comments: "We see no slowdown in PC sales in the European market. Indications are that the market will continue to grow. In the past, business cycles outside our industry have not affected the computer business."

At Italy's Ing. C. Olivetti & Company SpA, chairman Carlo de Benedetti expresses confidence. "We shall weather the storm," says the veteran European industrialist and financier. "When I first went into business, my grandfather taught me that the first lesson is not to have debt. Olivetti does not have debt."

Benedetti, whose company is based in Ivrea in the foothills of the Italian Alps, expects profits for fiscal 1987, ended in December, to drop. Revenue has been hurt because AT&T, which has a 23.5% stake in Olivetti, bought only one-third of its output of PCs during the year. This was a hard blow because Olivetti depends on PC sales for one-quarter of its revenue. But Benedetti says that this year, AT&T will double its PC purchases to 120,000.

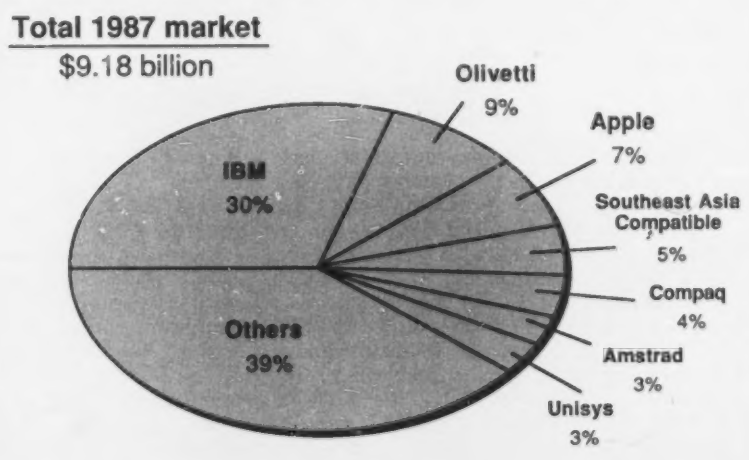
Olivetti's performance was also undermined by the mammoth task of restructuring Triumph Adler, a German typewriter and PC acquisition, and by completely revamping its own PC line to meet the market conditions created by IBM's introduction of the Personal System/2 range.

Space awaits

In Europe, plenty of space on European desks awaits PCs because they have so far found their way to only 12% of them. That compares with

European PC makers are gaining market share at home

Estimated European personal computer market shares



Source: Intelligent Electronics Europe, Dataquest

Growth worth celebrating: European microcomputer revenue rose 36% in 1987

over 18% in the United States. However, Intelligent Electronics, which was acquired last year by market research firm Dataquest Inc., expects the speed at which local white-collar workers move from pen and paper to PCs will vary. Within two years, 30% of Swiss office personnel are likely to have their own machines, but only 20% will have them in Italy.

Buyers are taking a hard look at the PC strategies that will best help their own businesses prosper over the next five years. For many the choice is confusing. Lower prices for PCs of the previous generation are opening up new desk space. Simultaneously, higher performance machines are pushing their way into the lower end of what, until recently, was regarded as the preserve of the mini-and mainframe computers.

Intelligent Electronics' Morel comments: "The past months have been marked by the emergence of a more diversified marketplace for PCs in Europe. It is no longer a single product market." Large account users are going after development of productivity and full-scale networks which draw on all the resources of PC technology. Desktop publishing is now an area in which the PC is pushing strongly."

Students, executives and small-business people who work at home have opened a new PC market in Europe. This home market accounted for only 10% of European microcomputer sales in 1986. Last year it represented 30%. Many purchasers have chosen the $700 IBM-clone designed by Amstrad Consumer Electronics Plc, a British manufacturer (see related story) which in earlier years made its mark with high-fidelity units and a simple but successful word processor. Last year, Amstrad sold 300,000 MS/DOS PCs in Europe and became the continent's No. 2 supplier by units. However, in revenue terms it was way behind the leader, IBM, which sold 600,000 units, Olivetti and Apple Computer Inc.

"We are not just catering for the ongoing requirement," says Keith Warburton, Amstrad's manager of business products. "Our pricing has uncovered an unsatisfied need. We are pulling from the future the customers who might have gotten around to buying a system eventually. But they would have needed time to put the finance and budget justification together. We are making that product available now."

In U.S. dollars, European microcomputer revenue is rising at a spectacular rate. It grew by 43% in 1986 and by 36% in 1987, according to Intelligent Electronics. Reckoned in European currencies, which are a better yardstick because these are not distorted by the plunge of the dollar's exchange value, sales rose by 20% over each of the past two years.

This year is a major landmark for the PC because most models will be celebrating their fifth anniversary in Europe. For many of them, 1988 will mark the end of their lifespans as faster, more powerful machines that use Intel's 32-bit 80386 microprocessor edge their elders out. Compaq Computer Corp.'s Deskpro, which incorporates this chip, is faring well on the European market. Users are also waiting impatiently for delivery of many models of the IBM PS/2 machines. At present, they must wait for as long as six months. Compaq has recentlyjoined IBM in producing micros at its own plant in Scotland. ▷

Hal Mayforth

At his headquarters in Munich, West Germany, Eckhard Pfeiffer, senior vice president, international operations, for Compaq, is naturally worried about the threat from the PS/2. "IBM has muddied the waters," he says. But Pfeiffer adds: "The market is not about to rush off in a new direction just because one large company changes the signposts around. You can't turn an oil tanker on a sixpence. Big businesses are not turned easily, either. Compaq has demonstrated that the highest performance in PCs is available within the old standard."

However, Intelligent Electronics' Morel says: "The advent of PS/2 has brought dramatic change. IBM has signaled that it is challenging the MS/DOS operating system that it first set as an industry standard. It is doing this with its Micro Channel [a proprietary bus for plugging in circuit cards for communications], extra memory and other functions. From now on, we could be facing several manufacturing standards for PCs."

Among European manufacturers, Italy's Olivetti and West Germany's Nixdorf Computer AG have joined IBM and Compaq in introducing new families of computers over the past few months. "Everybody is trying to get onto the starting blocks of the new era," says Morel. "They all want to cater for European users who are shopping for more technology at the old price with greater use of graphics, multitasking, sophisticated communications and 101-key keyboards."

As the European PC market matures, the selling scenario is changing. Nixdorf, which until now has stood aloof from the scramble and concentrated on its minicomputer customers, is going into the large account market as a contract PC supplier. "We've already got batch orders for

The home computer market, which accounted for only 10% of total European sales, may be ready to break wide open

thousands of machines from Fiat and Allianz, Germany's biggest insurance firm," says Wendorff, the manufacturer's products chief.

Adopting a similar strategy to Compaq in promoting its new range of 80386-based PCs, Nixdorf is preparing to present a competitor for the PS/2 at Europe's CeBIT microcomputer show in Hannover, West Germany, in March. "We shall go into this new arena with OS/2 kits that we intend to run on our own machines. Depending on how fast Microsoft delivers the software, we plan to begin shipments in the second quarter of 1988," adds Wendorff.

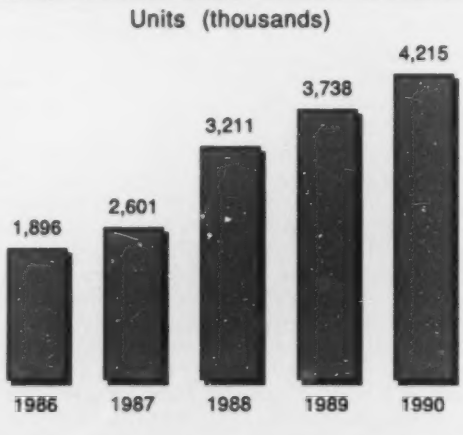
Nixdorf has made its mark in Europe by selling banking and retail business systems. It has scored a similar success in the United States with a $100 million deal with Montgomery Ward. Heinz Nixdorf, the West German manufacturer's founder, long believed he could capture sales by providing the company's own proprietary hardware and tailored software solutions. Klaus Luft, his successor as chairman, has now recognized that its products must be compatible with those of IBM if Nixdorf is to make an impact in office and factory automation.

Wendorff says: "Even though we are now introducing a full range of PCs, including an OS/2 compatible model, our PC business is still relatively small. But it is now a strategic axis of our development and, in the medium term, could grow to 15% of our business."

Lines are drawn

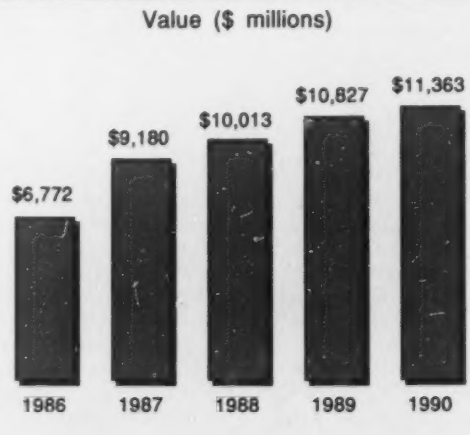
Olivetti is founding its strategy for recovery on a new line of both micros and minicomputers of its own design. Alberto Alonzo, an analyst with Barclays de Zoete Wedd, says: "They are trying to promote a new Olivetti look. This is a culmination of Olivetti's strategy of being not just a

European PC shipments grow both in units . . .



Source: Intelligent Electronics Europe, Dataquest

. . . and in the value of shipments



Source: Intelligent Electronics Europe, Dataquest

maker of computers, but offering networks and services."

Olivetti's expansion plans and government investment in electronics should take Italy's semiconductor market to $700 million in 1988. However, semiconductor industry specialists do not regard the PC industry as the fastest growing segment of their business. Jan Calen, marketing director for Europe at Motorola Semiconductors, says: "Telecommunications will give a bigger boost than computers to European chip sales, which we expect to grow by 8.3% in 1988."

In Europe's maturing PC market, there are increasing signs of specialization by manufacturers and dealers. In the highly competitive large account business, Unisys has arrived with PCs to complement the minicomputer systems traditionally offered by its founders. Siemens AG of West Germany; France's Groupe Bull; and the United States' NCR Corp. are also strong contenders. IBM has reaffirmed its claims with the announcement of the PS/2.

National manufacturers such as Bull, Siemens and Britain's Apricot and the Netherlands' Tulip are strongly positioned among value-added resellers in their local markets.

The development of Europe's PC market will depend on how the business user community reacts to the recent turbulence in the financial world. Intelligent Electronics' Morel comments: "The crisis could discourage capital investment in PCs by large account users. The upheaval in the big money centers is also seriously affecting the financial position of components manufacturers in southeast Asia. The fortunes of these suppliers are closely tied to the stock exchanges in Hong Kong and Taipei. Although the PC market will continue to grow, the immediate outlook is far from stable."

JACK GEE

Amstrad's Alan Sugar: Wonder boy of the European PC business

Alan Sugar began his business career hawking car-radio antennae from a van in London's East End. Today, as chairman of Amstrad Consumer Electronics Plc, he is said to be worth $700 million. Sugar owes his fortune to a 45% stake in this company which, starting out as a small peddler of high-fidelity systems, now sells more microcomputers of all types in Europe than IBM.

Sugar makes no bones about his ambition. "At Amstrad, we want your money," he proclaims. Vaunting the merits of mass-merchandising PCs, he says: "Our marketing philosophy is: pile 'em high, and sell 'em cheap."

This approach has worked well in Britain, where Amstrad word processors and, more recently, personal computers have saturated the national market. The Amstrad PCs are also selling well in other parts of Western Europe. Based on Intel Corp.'s 8086 microprocessor, the Amstrad PC 1512 has a memory capacity of 512K RAM.

But, since Sugar introduced his IBM clone in September 1986, his market forecasts have been dampened. Although he announced sales would start at 70,000 a month and rise to 100,000, they are averaging only 30,000. Priced as low as $700, the Amstrad PCs sell briskly through mass merchandisers. But they have poor acceptance among large corporations.

This corporate diffidence is affecting the company's growth. Amstrad, which has reported triple digit annual growth rates since 1984, reported only a 35% rise in pretax profits for the first six months of 1987.

Performance in the United States has also been disappointing. Amstrad made a sluggish start two years ago. Until last fall its machines were marketed by Sears World Trade Inc., which Sugar accuses of failing to use his aggressive sales tactics. Now he has acquired Vidco, a Texas-based distributor, for $7.5 million and hopes to increase the U.S. contribution to Amstrad's revenue from 8% to 30%.

"By 1990, the U.S. could be our leading market," Amstrad's founder proclaims. But perhaps the wonder boy of corporate Britain might have to review his American objectives once again. □

APRIL IN

Electronic Business

April 1

- ASICs
- Top Power Supply Companies
- Power Supplies
- Automatic Test Equipment
- Smart Power
- *Computer Business Section* Printers

ADVERTISING DEADLINE: March 3, 1988

April 15

- Best Executives of the Year
- Connectors and Interconnection Components
- Production Equipment for Surface Mounting
- Semiconductors
- Military Electronics
- *Computer Business Section* Impact of Operating Systems

ADVERTISING DEADLINE: March 17, 1988

A CAHNERS PUBLICATION
275 Washington Street
Newton, Massachusetts 02158

INFORMATION SERVICES

BellSouth: Risky business for the biggest Baby Bell

Banned from manufacturing, the seven RBOCs are going after the videotex services market. BellSouth leads the way

Since the breakup of AT&T in 1984, Atlanta-based BellSouth Corp., with 15 million customers in nine southeastern states, has emerged as the largest of the resulting seven Regional Bell Operating Companies (RBOCs). For all its girth, however, the biggest Bell on the block could hardly be called the biggest risk taker, especially in the datacommunications business.

It wasn't BellSouth, for example, that bought IBM's Atlanta-headquarted chain of computer retail stores two years ago, but Nynex Corp. of New York. To be sure, BellSouth's conservative strategy has avoided some problems faced by other RBOCs.

On the other hand, BellSouth hasn't blazed many new trails. As Lap Lee, an analyst for Salomon Brothers Inc. in New York City, put it: "BellSouth has a good batting average but doesn't hit many home runs."

That cautious image may be changing. BellSouth's two telephone operating companies, Southern Bell and South Central Bell, have invested heavily in fiber optics for improved data transmission. And BellSouth is now pioneering a risky business whose regulatory boundaries are still being drawn — information services.

The only game in town

In the current legal environment, industry experts say information services promises to be the only new multibillion dollar business open to the RBOCs in the next five years. U.S. District Judge Harold Greene, who monitors the RBOCs compliance with antimonopoly regulations, has denied the Bells permission to manufacture equipment or offer interexchange long-distance service. But in recent rulings, Greene has given his conditional OK for entry into information services.

As a model, Greene cited the Minitel system in France. There, some 3.3 million business and residential consumers use Minitel terminals — small, nine-pound terminals that plug directly into phone outlets — to order goods, pay bills, and subscribe to news and entertainment services supplied by 3,500 independent service providers.

The RBOCs, according to Bernell Wright, a consultant with Link Resources, a subsidiary of International Data Corp., in New York City, will participate in a segment of the information services market known as videotex services — defined as electronic services, such as database access and voice messaging, offered over public telephone networks. Last year, that portion was a $120 million market, says Wright. With the entry of the Bell companies, Wright predicts the market will more than double, reaching $384 million in 1990.

For all its potential, however, videotex services has been an industry rife with failures. In the past two years, Knight-Ridder Inc. and Times-Mirror Co. each abandoned such services after investing tens of millions of dollars, concluding the ventures were ahead of their time.

Videotex market will double by 1990 if RBOCs enter the market

Source: Link/IDC

BELLSOUTH's BOREN: "One of the things this industry has suffered from is overhype"

But the time may be right for the Baby Bells, says BellSouth vice president Sidney Boren. He believes that the RBOCs, with their ubiquitous networks and unrivaled penetration into home and office markets, could make videotex services available to a wider audience. Through economies of scale the services could become more affordable. And if dialing a database was as simple as dialing a telephone, and billing and menus came from a single, familiar source, more customers might use the services, he says.

"The key is going to be education and marketing," says Boren. "The great majority of people are not comfortable with computers. We have to show people what is available and how to use it."

BellSouth plans to play

So far, BellSouth has been leading the way. "BellSouth is first right now in gateways and infrastructure," says Joshua Harris, a researcher for Jupiter Communications Inc. of New York City, which prepared a fall 1987 report on the RBOCs' preparedness to enter the videotex services business. By 1990, the report predicts, San Francisco-based Pacific Telesis and BellSouth will be the first to achieve "critical mass" in the consumer market for videotex services.

The company has pushed ahead of its siblings with several industry-leading moves in the past six months. BellSouth became the first RBOC to demonstrate a functional "gateway"

for videotex services at an industry show in Chicago. The gateway would be the part of the telephone network that customers dial up to see a menu of available services.

The company also signed a first-of-its-kind deal with Telenet, the data-communications arm of US Sprint. The agreement allows customers outside of large cities to gain access to Telenet's services without paying for a toll call.

And BellSouth announced a deal with National Data Corp. of Atlanta, the market leader in providing transaction services for bank credit cards, to put special terminals in 10,000 pharmacies in the Southeast. The terminals, made by a yet-to-be-named third party manufacturer and resold by BellSouth, will route insurance and payment videotex to National Data's mainframes.

Providing videotex services could create demand for mass-market terminals that Bell companies could resell. Boren says BellSouth is now exploring its options but has yet to sign a deal with a terminal maker. Among other manufacturers, BellSouth has had discussions with U.S. Videotel Inc. of Houston, which has U.S. marketing rights for the Minitel terminals made by an arm of French manufacturer Alcatel.

Boren declines to say if terminals supplied by Videotel, or other manufacturers such as Hewlett-Packard Co., would be part of videotex services field trials which BellSouth says it will be ready to conduct within six months.

But Boren says the videotex services network should not be limited to "dumb" terminals, such as the Minitel system in France. In the United States, says Boren, "there are 25 million PCs and other smart terminals out there, and we would be foolish to ignore that."

Despite that, however, less than 1 million people currently subscribe to videotex services. The largest service provider, CompuServe Inc. of Columbus, Ohio, has about 370,000 subscribers.

Boren is aware of BellSouth's uphill battle. He cautions that videotex services is not likely to be an overnight revolution. "One of the things this industry has suffered from is overhype," he says. "We kept hearing about the checkless society, and it never happened. We've got to be realistic about the acceptance of the public. It will be a very gradual process."

CHARLES ELMORE

Do yourself a service Let ELECTRONIC BUSINESS readers know about your services

Next August 15, ELECTRONIC BUSINESS will publish its annual directory of Services for the Electronics Industry. If your company can help other electronics and computer companies complete a project on time, save costs, reduce risk, get to market faster and safer, increase efficiency, improve quality, or any other pertinent electronics service, the name of your company or division, and the type of service it provides for our readers, belong in the pages of the ELECTRONIC BUSINESS directory.

Example of services that will be listed:

Design: product design, circuit design, custom ICs, design centers, software development, package and packaging design, thermal design, documentation.

Manufacturing: contract manufacturing, printed circuit design and fabrication, mass lamination, purchasing services, kitting services, value added services, cabling, connector assembly, quality assurance service, just-in-time services, component procurement services, production software services, electrostatic discharge protection services.

Test: electrical test services, environmental testing, failure analysis, instrument rental services, test software development, production testing.

IC Foundry: silicon, CMOS, custom processes, gallium arsenide.

IC Assembly: die attachment, wirebonding, packaging, marking, sorting.

Distribution: services by and for industrial distributors, distribution channels, dealers, packaging for distribution and retailing, point of sale services.

Training: quality training, statistical production control, JIT training, purchasing, negotiating, management training.

Management: product strategy, global strategy, international operations, management consulting, temporary additions to management team.

Marketing and Sales: strategy, market research, product strategy, product position, sales representation, product promotion, export promotion, advertising, public relations.

Financial: leasing, banking, insurance, venture capital, mergers and acquisitions.

Transportation: freight forwarding, air cargo, customized packaging.

How to submit your listing:

- Name, address and telephone number of company or division that performs the service. If available, add telex and fax numbers.
- Type of service: Please be specific. (If you enter in more than one category, such as design and manufacturing, please list separately.)
- Name of managers(s) responsible for services for electronics and computer companies. Include direct telephone number, if available.
- Current volume of sales of this type of service to electronics and computer companies.
- Number of employees at this company or division, involved in this type of service.
- Specialized equipment, knowledge, and/or capabilities, which qualify your operation to perform this service. (Please list or describe in 50 words or less.)
- Name of at least one client among electronics and/or computer companies.

Send your entry, before April 30, 1988, to:

Services, Alberto Socolovsky
ELECTRONIC BUSINESS
487 Devon Park Drive Suite 206
Wayne, PA 19087
Phone: 617-964-3030 • Telex: 94-0573CPCBSN • Fax: (617) 964-5490

Electronic Business

PRINTERS

Europe's printer wars: Losing the battle to Japan

Japan's printer makers are planning to build Euro-factories to beat the tariffs their European rivals are howling for

Europe is flexing its muscles for a battle royal with Japan. Unlike the U.S. electronics industry, the Europeans are not pulling on the gloves for a fight over semiconductors. Their bone of contention is Japan's pricing policy for printers. With sales of 2 million units a year, these have captured 30% of the Europeans' home market. For its counter-attack, Europe has devised a strategy which, before this spring, could produce tariff duties on imported Japanese machines.

Seven of Europe's largest printer makers, including NV Philips and Mannesmann Tally, have joined forces under the banner of the Europrint Association, to defend their interests. They have persuaded the watchdog commission of the 12-nation European Common Market to undertake an anti-dumping investigation covering a score of Japanese manufacturers of matrix and daisy wheel printers.

While the debate heats up over Japan's place in the European printer business, the market is booming. Between 1985 and 1986, sales more than doubled, from $350 million to $750 million, and since 1981, the electrophotographic page market has expanded eightfold. Market watchers expect this technology to be the strongest long-term growth sector in Europe's printer sector.

Japanese competition in Europe is not only a problem for local national printer makers. U.S. manufacturers with European plants face the same challenge. They include IBM, which operates a big facility in Jarfalla, Sweden; Xerox Corp., in Michel Dene, England; Printronix Inc., in the Netherlands; and Dataproducts Corp., near Dublin, in the Irish Republic.

To put the squeeze on the Japanese, the European Community (EC) is demanding that 40% of the value of their printers' components must be made in Europe. Machines which do not meet this requirement risk a tariff of between 20% and 30% when the current EC investigation is completed. A levy of this order would be comparable with the existing duty on low-end copiers with which, until recently, Japan had been flooding Europe.

But the Japanese, who regard a steep levy on their printers as inevitable, are taking counteraction. Over the past few months, they have announced plans to build eight full-fledged printer plants in Europe. Within a couple of years, most of the 2 million printers which Europe today imports from Japan will be made at European sites.

Britain, which offers particularly tempting cash incentives to industrial investors, will be the home of six of these new plants. They will be operated by Brother Industries Ltd., Citizen Watch Co., Seiko Epson Corp., NEC Corp., Oki Electric Industry Company Ltd. and Panasonic Industrial Corp. Ltd. Tokyo Electric Co. (TEC) intends to manufacture in West Germany and Fujitsu Ltd. in Spain. "And that list is not complete," says Al Springsteel, a vice president of Dataquest Inc. and director of the San Jose-based research firm's Western European Printer Industry Service. "At least two or three other Japanese manufacturers intend to follow suit."

The Japanese strategy will mean more jobs for Europe. Before the recent plant decisions, 200 people on that continent were making Japanese-designed printers. Within a year, that number could become 1,200. Three or four years from now, Japan is likely to employ 4,000 workers in its European printer factories. U.S. printer manufacturers already have 3,000 people on their payrolls in Europe.

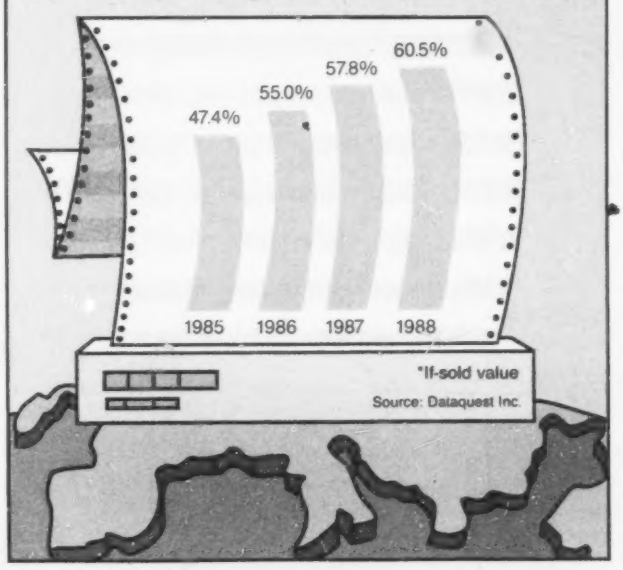
Not necessarily cheers

Good news for Europe's labor force will not necessarily raise cheers among Europe's printer users, who could face significant price increases. To produce locally, Japanese manufacturers will have to shoulder the burden of duplicating facilities, procurements, management, tooling and quality inspection. Also, there is the question of whether European parts are comparable to Japanese parts for either price or quality.

The issue of Japan's alleged printer dumping is dear to the heart of Jürgen Mammitzsch, sales and marketing manager for peripherals at Philips Kommunikation Industrie AG, based in Siegen, West Germany. Mammitzsch, a leading promoter of the Europrint group, says: "Japanese printers cost more in Japan than in Europe. That means they are dumping them over

Europe's printer market is growing much faster than the U.S. market

Estimated value* of Western European printer market as a percentage of the North American market



here. Tariffs are not the best way to solve this problem. But, right now, they are the only solution." He adds: "In the longer term, European manufacturers must learn from the Japanese. We must ensure that we can offer a full range of printers that equal the Japanese quality."

However, Europrint's clamor against the Japanese is not universally endorsed. Says Dataquest analyst Springsteel: "The European community is irritated by its overall $12 billion trading deficit with Japan. But only part of this can be attributed to printers. In my view, it is most likely that the Japanese are not really dumping. On the contrary, they derive considerable advantages from the value of the yen, their energetic and disciplined workforce and their product design concepts. They also have a head start thanks to their mastery of industrial automation, the infrastructure of their component suppliers and their global marketing and production volumes."

EC officials make no secret that, in implementing legislation to control the current trade flow from Japan, they are trying to head off future trade deficits with Korea, Singapore and Taiwan. An official at EC's Brussels headquarters says: "We're taking preventive action against these newly industrialized countries. Otherwise, they too could demand the same lopsided access to European markets that Japan has enjoyed until now."

Don Pinchbeck, general manager of Epson UK, which is based in Telford, England, says: "Japan may be seen as the industrial enemy today. But tomorrow it will be Korea. And, when China's turn comes, who dare cripple that economic giant?"

Ironically, while ganging up on the Japanese, Europrint members are buying printers from their antagonists and selling them under their own logos. Mannesmann Tally, for instance, resells Copal units, and Facit of Sweden markets TEC printers. European manufacturers do not, apparently, see any contradiction in making such deals while sending their lobbyists to EC to demand high duties on Japanese printers.

The market for printers is growing faster in Western Europe than in the United States. Sales in North America peaked at $7.3 billion in 1984. Then they contracted. Since 1985, they have remained stable at around $6 billion. And while shipments in Europe have quadrupled since 1981, they have grown by an annual average of 10% in the United States, a disparity that is explained by Alan Clemmetson, associate director of Dataquest's Western European Printer Industry Service: "In the U.S., 60% of white-collar workers are using desktop computers. In Europe, only 25%. So the European market for both PCs and printers is much further from saturation than that of the U.S," he says.

Although current interest is strongly focused on non-impact technology, impact printers still represented 91% of European sales in units, and 92% in value in 1986. They remain the lifeblood of the industry. Impact printers are continuously improving in quality as manufacturing costs are driven down and performance is enhanced.

According to Dataquest, the 24-wire serial impact dot matrix printer market grew by 146% in 1987, whereas the low-end laser printer market developed by 90%. Hamish Dewar, managing director of Clan Systems Ltd., a Livingston, Scotland designer of laser printer controllers, says: "The way the dot matrix business is fighting back is impressive. And it is essentially cost driven."

The Europeans may be taking action to protect their dot matrix business, but the Japanese could embarrass them by speeding up the introduction of their next generation of low-cost page printers. With only a few exceptions, Europe's manufacturers have spent little or nothing on developing this technology.

JACK GEE

Japan's Scots lesson

The Japanese have mastered the technology of building cost effective engines for laser printers. But they have run into trouble in trying to master the software technology needed to merge text and graphics. To fill the gap, they have turned to firms on both sides of the Atlantic — firms like Clan Systems Ltd. of Livingston, Scotland.

The founders of this electronic design company are Hamish Dewar, a Scot, and Igor Hansen, a Pole, who met during a university research program. Four years ago, while talent scouting for a laser controller, Fujitsu selected prototypes from three U.S. suppliers and one in Europe: a design by Dewar and Hansen. Basically, it resembles a TV screen that produces 8 million dots to a printed page. The controller turns this information into a page intelligible to the printer.

Dewar, who is managing director, says: "Now we are looking to doing enhancements for Fujitsu and other printer manufacturers." Hansen, Clan's technical director, comments: "The Japanese are not yet capable of doing this sort of job. They are surprised how sophisticated the controller for a laser printer is compared with that for a serial printer. It's a major leap in software." □

CLAN SYSTEMS' HANSEN (left) AND DEWAR: Surprising the Japanese with canny software for driving laser printers

NOTE

ONLY THE FOLLOWING PAGES OF THIS

PUBLICATION HAVE BEEN FILMED

Cov. 1, pgs. 3, 17, 18, 36-38,

40, 52-54, 56-58, 61, 66-68,

70, 72, 76-78, 80, 82, 88,

101